GAS JOURNAL

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MENACE OF THE COMING WINTER

THE recent publication of an Interim Report of the Parliamentary and Scientific Committee on Coal Utilization is an event of much importance. It marks a great step forward in the education of politicians in the economy of fuel. It shows that Parliament begins to realize that the public expects something to be done to save it from the menace of the coming winter. The Final Report may show that something can be done to guard against the rigours of future winters and finally to maintain and perhaps improve the general standard of comfort as well as to check the wastage of our major native asset, coal.

The composition of the sub-committee (with one representative of carbonization out of seven technical members) which prepared the report now published explains why very, very little is said about gas and the carbonizing process and a very great deal about electricity and other aspects of the fuel problem. We do not wish to be unfair about this. The electricians are entitled to some sympathy. They are overwhelmed by the growth of the domestic heating load. True, they encouraged it themselves, but they have been surprised by the fact that, whereas it was hoped it would be largely an off-peak load, it has turned out to be an on-peak load, now responsible, together with the similar "office" load, for about 40% of the peak demand. They celebrated the end of the war by proceeding to sell 2 million new electric "fires"—the sale still continues—and they find themselves faced with the demand from 10 million "fires" in the possession of the public of which 3 million may be switched on simultaneously during a cold spell.

We are somewhat disturbed too by the basic estimate of overall efficiency with which the Report opens. "In 1913 only 15% of the potential energy in coal was turned to useful account. Even to-day—not much more than 30% is turned to useful account." Whence is this astonishing figure derived? No one has disputed Mr. Lyle's estimates for the year 1944. The overall efficiency in use of gas and coke was 38%, industrial heating 23%, non-industrial and domestic 17%, and power generation, distribution, and use 2.2%. The combined overall efficiency was 18% which, when adjusted for losses in mining, is reduced to 15%. The extraordinarily low figure for power generation is due to the inclusion of such consumers as the railways, whose efficiency is very low indeed. It is the product of 14% efficiency of generation, of distribution, 87%, and of use, 18%. We suggest, therefore, that even to-day not much more than 15% of our coal is turned to useful account and that it was considerably less in 1913. But it still remains true that if one-tenth could be added to that figure—*i.e.*, if it could be raised to 16.5%—an output of 200 million tons of coal would be equivalent to 220 millions. And Mr. Lyle's own contention also remains true that savings of 80 million tons of coal a year should be readily achieved if the urge to economize were sufficiently great.

Long term proposals to achieve economy are wisely left to the Final Report. We are at present concerned with what can be done to produce immediate results and particularly to avoid another and worse fuel crisis next winter. First the administrative machinery. Nothing but good can be said of the proposal that one Minister, presumably the Minister of Fuel and Power (and, of course, we hope that "Ministry" is meant), should be solely responsible to Parliament for the allocation of coal supplies and that action should be taken solely on the advice of the Fuel Efficiency Committee. Such action must be given the greatest possible publicity. Public support is essential. It must be pressed home that coal production this year is not likely to be more than 195 million tons, normal consumption would be 210 millions, not more than 2 millions can be imported, leaving a gap of 13 million tons. That gap must be closed by substitutes or economies. But, during the 1946-47 crisis only 2 million tons were saved and the loss of exports amounted to £200 millions. There is as yet only partial realization by the public of the very real danger to our standard of living implicit in these figures. They must be brought home to the public, together with the plans made to deal with a difficult and dangerous situation. There is the danger that the menace of the fuel crisis will recede, during the warm summer weather, further and further into the background of the public consciousness.

Then there will be priorities. It is proposed to supplement the Cripps' scheme by introducing an element of reward for efficiency, or rather reductions in allocations to those who have made inadequate or no effort to secure improved efficiency. Allocations, it is suggested, should be the amount of fuel which would have been used if the efficiency reasonably expected had been attained. There is plenty of work here for the Regional Fuel Boards and great care will have to be taken to see that everyone has a fair deal. But there is no time, and should be no shrift, for delaying tactics. The Committee suggests that the Minister's limit of 5 million tons of imported oil should be increased to 8/9 millions and that conversion to oil fuel should be encouraged for boilers, diesel generators, in the steel and ceramic industries, for locomotives, and we have the somewhat cryptic passage that "liquid fuel is an intrinsic part of the newest and most efficient industrial technique" over an increasingly wide industrial field.

"Highest priority" is to be accorded to electricity generating stations which, with a deficiency which reached 1,828 MW in January, 1947, can only expect an increase in capacity of 600 MW during 1947. They might get another 300-400 MW if they could have better grade fuel. "Better grade

fuel," by the way, really means more fuel, since it can only be obtained by an increase in percentage of rejection of gross coal to the refuse dumps. The National Coal Board is already giving "highest priority" to cleaning installations and the Committee recognizes that ash represents 25 out of 200 million tons to be transported from pit to user.

And finally we have a very brief recognition of the difference in the properties of different coals. Not, of course, anything so bold as a ruling that coals which can be processed should be processed before using, but "that immediate steps should be taken to test on a works scale the potentialities of the principal coal components." (It is difficult to be patient with this)—"*i.e.*, the use of coal dust in pulverized fuel furnaces, the use of the 'caking component' (whatever this may mean) in gas retorts and coke ovens, and the use of the non-caking component for boiler firing." Just that and nothing more. Is it really true that all our efforts to educate the public, the politicians, and the Ministry have got no further than that?

The reactions of the national Press are mainly calm but realistic. It is realized that though the scarcity of coal can be lessened by better exploitation or by the use of substitutes it is late to start on steps involving new capital equipment. The suggested reforms in the machinery of allocation, the concentration of responsibility to one Ministry and one Committee, was on the whole well received, together with the principle that allocations should be conditioned by efforts already made to secure efficiency. The more popular Press is tickled by the proposal to make millions of oil stoves to supplement the domestic hearth. One would hardly think that any serious impression could be made on the problem along these lines. The dominant note was that time is short, the Government and the public have had plenty of warning, and that the Government particularly cannot complain if most of the blame falls upon it if our factories have to close down again for lack of coal.

STRIKING A BALANCE

MR. JAMES DICKSON, in his Address to the Waverley Association of Gas Managers, also dealt with the fuel situation as a whole and the prospects for next winter. The organization of the fuel resources of the country must be regarded as a composite whole with loads balanced between coal, gas, coke, oil, and electricity and with due regard to the suitability of these respective forms of energy for the purposes for which they are used.

The Gas Industry is already providing the public with refined fuels in such forms that the efficiency of utilization, on the basis of coal used, is higher than that of any of its competitors. Can it be raised by the extension of the carburetted water gas process to such a degree that it not only serves to meet peak loads but that it is merged into the base load? Obviously, the greatly increased demand for gas can be met in this way without a proportionate increase in gross coal consumption, though with a reduction in coke production. Mr. Dickson calculates that the use of 30% C.W.G. would result in 20% more gas (as may be required in 1948) from no more than 1½% more coal than used in 1945, but with 14% less coke for sale. A similar result would follow from an all-round reduction in the calorific value of gas supplied, and in this respect it is interesting to note that in Dundee a reduction from 450 to 425 B.Th.U./cu.ft. in the declared value met with no difficulties in the district and was attended with beneficial effects upon general manufacturing conditions. Provided that specific gravity and mains pressures were kept constant within narrow limits the change in C.V. appeared to have little effect on the combustion characteristics of the gas.

But the most interesting passage in Mr. Dickson's Address was that referring to actual experience with district heating. The Corporation of Dundee set up two installations of this kind after the first World War, one serving 250 and the other 268 houses. There are 378 three-apartment and 140 two-apartment houses in the two schemes. Experience has been gained in the actual cost of "district heating" plus the necessary supply of other fuels to complete the total fuel service. The average domestic consumption of gas per consumer in Dundee in 1946 was 129.2 therms per ordinary and 136.4 therms per automatic meter. The measured consumption of gas in the two district heating schemes averages 83.7 therms. The effect on the cost of the total fuel supply is that whereas "district heat" costs £14 6s. and £16 18s. per annum for the two and three-apartment houses respectively, the total average cost with the addition of "topping up" heat by means of a gas fire amounts to £20 3s. and £22 17s. respectively. Against this the cost of doing the whole job with 40 cwt. of coke and 197.5 therms of gas (Andrew, Dunning, and Holliday's figures) would be £14 13s. 4d. per annum. Mr. Dickson was confirmed in his view that a modernized solid fuel fire combined with an efficient gas supply will provide all the necessary services at less cost, with a greater degree of control, and more convenience to the user than can be obtained by a district heating scheme consuming coal for the purpose of heating water and distributing this to a minimum scheme of 300 houses.

PURCHASE TAX ON GAS WATER HEATERS

IN our issue of June 25 we referred to the exemption by the Chancellor of the Exchequer, following a debate in the House the previous week, of gas cookers and cooking apparatus from the purchase tax of 66⅔%, mentioning that Mr. Dalton added that a case had been made in regard to wash-boilers. Since then the tax on washing machines has been reduced from 66⅔% to 33⅓% and the tax on refrigerators has been removed. But nothing has been done about water heaters, which is as disappointing as it is wholly illogical. On June 25 we referred to the case put to the Minister by the British Gas Council for the exemption of cookers, and we urged that water heating appliances had similar and equally justifiable claim. We are glad, therefore, that the B.G.C. has again approached the Minister, this time presenting a case for the water heater—on the grounds of public health, fuel conservation, and, indeed, in the national interest in general. Now it is pointed out that a tax-free cooker can be—and in the absence of other more convenient means is—used for water heating. Yet a gas water heater does efficiently what a tax-free kettle does less efficiently. The imposition of purchase tax on fuel appliances cannot be dissociated from tax on its use. By denying the use of appliances efficiently designed for particular purposes, tax compels consumers to continue to meet their requirements by means wasteful of fuel.

In a memorandum sent to Mr. Dalton the B.G.C. emphatically stated that the "unprovident" use of gas is exceptional—this conclusion being based on experience over many years. And "observations relating to the different types of water heater suggest that a useful purpose would be served if the matter is elucidated. In the instantaneous type of water heater—which can be operated only by gas—hot water is produced only as and when it is wanted . . . The instantaneous heater and the self-contained storage heater can be installed at the point of supply, instead of being connected to the hot water supply system, thus affording the maximum efficiency and economy." Hot water is not a luxury; it is as essential in the home as it is indispensable in the surgery. In the interests of fuel economy hot water should be provided by the most efficient means available. Why should the gas water heater be penalized? It is estimated that of the 1,875,000 water heaters in use 80% are gas operated, of which two-thirds are of the instantaneous type. Before the war about 300,000 gas water heaters were produced annually; during the war output was negligible; 50,000 heaters were made in 1945; present production is of the order

of 250,000 per annum—an inadequate output. There is a cumulative need for the replacement of water heaters, quite apart from current and future demand. If 150 gallons of hot water (minimum weekly requirements of a family of four) are provided by an instantaneous gas water heater instead of a coke boiler, the saving of raw coal amounts to about 45 lb. per week. During the Government's Fuel Economy Campaign the million instantaneous gas water heaters installed could alone save 440,000 tons of coal. The imposition of the purchase tax on water heaters is detrimental to the success of the "Fuel Economy" campaign of the Ministry of Fuel and Power and the "Work or Want" campaign of the Board of Trade. There is another aspect. Since Budget Day orders have declined by 75%; personnel, including specially trained men, has been and is being discharged. This is not in the national interest.

PUBLIC LIGHTING

In the interests of traffic safety and prevention of crime, present restrictions on street lighting, which were imposed as an emergency measure last February, will be somewhat relaxed when Double Summer Time ends on Aug. 10. Until that date the present restrictions will continue. From Aug. 10, lighting authorities throughout the country are asked by the Minister of Transport to adopt a standard of street lighting which will achieve a minimum saving of 50% on pre-war fuel consumption. A request for a similar standard was made to lighting authorities in 1946, but the actual saving amounted to only 30% on pre-war figures. The full co-operation now asked for would give an additional fuel saving of 200,000 tons per year. The general basis on which lighting authorities are asked to make their plans is contained in a circular letter sent to local authorities. Trunk roads and classified roads in built-up areas should be lighted to a good standard, economies being effected by a saving in the lighting of other roads. All street lighting should be extinguished at midnight unless the police recommend to the contrary. It may be restored in the early hours of the morning where it is thought to be necessary and is technically possible. Before reaching a decision regarding roads in which a saving is to be effected, lighting authorities are asked to agree their proposals with the police. Where, for special reasons, lighting authorities can show they cannot achieve the minimum saving of 50% on pre-war fuel consumption they should get into touch with the Regional Fuel Officer of the Ministry of Fuel and Power and the Divisional Road Engineer with a view to negotiating a slightly lower percentage of saving. The Minister is not prepared to authorize any new or extended street lighting installations except on roads where lighting is essential for the safety of traffic, or where it will not entail any material increase in fuel consumption and is justified on traffic grounds.

Commentary by "Abaris"

Graduates

Professor Ward's admirable Paper to the Institution on the "Recruitment and Training of Gas Engineers" produced an interesting discussion. Let me say right away, however, that the Professor plumps for graduates because he is a party to their production in his University, though no-one can doubt his sincerity. Being such an important subject, I take the opportunity to raise another hare or two. Some graduates get a job, stay a while, and then move on to a post elsewhere, possibly to the detriment of the first employer. Often, a well-connected graduate must, alas, be regarded as a migratory bird. The matriculation student, on the other hand, if encouraged and looked after, will tend to stay with the company that gave him his start ;and he will qualify the hard way. Some undertakings take graduates and put them to work alongside colleagues of the same age, doing the same job, but at higher rates of pay. This must necessarily cause discontent. Many of the graduates come from homes forlornly endeavouring to maintain a reasonable standard, and the matter of adequate payment must be considered with forethought and understanding. Workpeople are suspicious of the ex-University employee, who usually has had no experience of man-management. To-day this aspect is important and will become more so in the very near future; it must not be neglected or jeopardized by newcomers with, sometimes, odd ideas of humanity. Admittedly, in gas making, an ounce of practice is worth a ton of theory.

A Policy

Policy, Parliament, Politicians, Planning; how many Ps without the Qs there are. The Poor Public have become sceptical and at least half of them must, in addition, be perplexed; all they can grasp are such facts and figures as are presented to them verbally, or in print. Any deductions they make will vary according to their intelligence quotients. Many in the Gas Industry are almost befuddled by the march of events and by the series of edicts handed out by their material overlords in the Ministries; to the average mind, the jig-saw puzzle of industry is just a baffling chaos. To my mind, policy means development along defined lines that are likely to benefit consumers, shareholders, and the employees; but no-one knows if a short term, or long term, policy is being envisaged. Speculation, instead of stimulating business, is directed merely to the question of nationalization. Assuredly the policy within the industry is being cramped by what can only be called a war of nerves; the battle of supplies, the battle of paper forms, the battles of labour and priorities, are plain incidents in the war. The gas leaders are watching with more than interest the haggling over the Electricity Bill and the personnel questions that are being aired so maladroitly. When electricity is mummified, gas may have been able to envisage the work of the undertakers who seem to take an unconscionable time in laying out, and binding up, the hapless corpse, in red tape. If gas is nationalized, will it be managed by a National Gas Board with a vast, new staff, large buildings, sleek cars, and no ideas, all chargeable to the consumer at so much extra per therm?

Coal

The end of one woe is the beginning of another, said one old Roman long before coal was gasified. Now, coal and woe are almost synonymous and there seems to be positively little hope of stimulating our coal output. Low productivity may be due to a variety of causes or combination of causes, from bad working conditions to sheer perversity; you can take your pick any day. But, whatever the cause, a strong remedy is needed, a speedy remedy. A cancer can be cut out by a surgeon, or treated with radium needles, both methods being painful to the patient. Early treatment of a radical kind is indicated as soon as possible after diagnosis. There is no need to deal painfully with the ailing coal industry, but something apart from fine words, hot or cold, bitter or sweet, are required. What the miner does not like, is paying taxes; and who does? What he does like is spending his money; and who doesn't? Miners have always been spenders, and in my view, special stores on N.A.A.F.I. lines ought to be put up in mining areas where they and their families can spend. At the present time, miners work hard only when they want to, because there is not very much that money can buy. Give them, therefore, the goods and they will get on with the job. All the hortatory speeches and fine words in this world, will never produce one pennyworth of coal; surely our politicians are aware of this by now? The graph of outputs is indeed a sorry temperature chart. Meanwhile, the Gas Industry pays through the nose for coal that almost wears sack-cloth; we get the ashes, and have to be thankful.

The Future

One man lives awhile, accomplishes much, and dies; another lives his span, achieves nothing, and expires. This is a fearsome natural law, with its ultimate obliteration. The Gas Industry has accomplished much during its 135 years and may, in the course of time, be superseded by atomic energy in one form or another. The future is not clear by any means. Gas, as a fuel, may cease altogether and although the thought is unpleasant, it must be borne in mind. It is, however, conceivable that the carbonizing industry will remain to continue the distillation of coal into fine chemicals of all kinds; it is equally conceivable that the production of oils from coal will remain an important side of carbonization. The real value of coal lies within its black exterior, and whether it is distilled by producer gas, coal gas, or

atomic power, the hidden substances can only be extracted by special treatment in elaborate plant. Chemical works may continue to be supplied by what are now called gas-works.

The "Architectural Review"

Recently, the *Architectural Review* gave to the weary world a beautiful issue on the Gas Industry, which should be read by all responsible executives; and some of the irresponsibles, too. This edition was a laudable attempt to give *multum in parvo*, under the imposing title, "Gas in the National Plan," and leads me to ask, where is the national plan, anyway? The material in the review varies from excellent to indifferent, and I say this, because in one article the monster Emotion rears its ugly head. I hope that the gentleman who wrote so forcefully about gas, will turn some of his attention to Pottery, Steel, and Housing, where he should find much to stimulate his wits, and where the full spate of emotion is possible. All gas-works, admittedly, are not handsome; they are surrounded sometimes by poor property; they are odoriferous; but these are unavoidable if one takes history and economics into consideration. The phenomenon of evolution is a process that is often forgotten. Industries do not spring up over-night in well designed premises; well planned towns do not appear as if by magic. Evolution and economics could almost be called the father and mother of industry, and what we see around us to-day proves that they are not solicitous parents. Gas caused a minor social revolution; gives smokeless fuels; eases housework; makes life comfortable, and has halved smoke pollution. With such a record of sterling service, let us sniff the ozone by the gas-works with never a blush; and eye that gasholder with pride.

Personal

Dr. DAVID GREIG, B.Sc., D.Phil., A.R.I.C., has been appointed Executive Manager of General Gas Appliances, Ltd., his appointment dating from July 1. Dr. Greig will act as Assistant to Mr. H. C. Wilson Bennetts, Chairman and Managing Director.

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Mr. J. PARNABY, Chief Meter Collector, Castleford and Whitwood Gas Light and Coke Company, was recently presented with a casket of cigarettes and a table lighter by Mr. W. R. Gill, Chairman of Directors, to mark the occasion of his retirement after 43 years' service with the Company.

Obituary

Mr. R. H. BARHAM, who for 22 years until his retirement last year was Distribution Inspector for Kettering Gas Company, died at Colchester on July 6, aged 66.

* * *

General Manager and Engineer of the Cheltenham Gas Company from 1914 to 1924, Mr. JAMES PATERSON, M.A., M.Inst.Gas E., died at his home at Glencairn Park Road, Cheltenham, on July 7 after a long illness. Mr. Paterson, who in 1914 succeeded his father, the late Mr. R. O. Paterson, as Manager and Engineer, after having acted as his assistant from 1910 to 1914, was one of four brothers, of whom one is Mr. George McLeod Paterson, designer of the *Queen Mary*. Educated at Cheltenham Grammar School and Clare College, Cambridge, Mr. Paterson was at one time Vice-President of the Institution of Gas Engineers. Following his resignation from the Cheltenham Gas Company he became Secretary of the Federation of Gas Employers (Midland District) and represented Messrs. George Glover and Co., Ltd., of Chelsea, in the Midlands and West Country.

* * *

We regret to record the death, on July 12, of Mr. JAMES MITCHELL, Engineer and Manager of the Leicester Gas Department. Mr. Mitchell, who was 63 years of age and had been in poor health for some time, had been at Leicester for 14 years, having succeeded Mr. Hubert Pooley in June, 1933. Elder son of the late Mr. R. Mitchell, of Edinburgh, he was educated at George Watson's College, Edinburgh, and received his technical training at the Heriot-Watt College, afterwards serving his articles as a mechanical engineer with Brown Bros., of Edinburgh. For five years he was Manager of the Montrose Gas Company, and during his tenure of office the works was almost completely reconstructed and the output increased by 40%. He next became Chief Assistant to Mr. A. Youill, Engineer and Manager of the Dundee Gas Department, and in 1919 he was appointed Engineer and Manager of the Nelson Gas Department, where he remained until his appointment at Leicester. His brother, Mr. G. P. Mitchell, is Managing Director and Chief Engineer of the Worcester New Gas Light Company and immediate Past-President of the Midland Association of Gas Engineers and Managers.

Letters to the Editor

Correct Procedure

DEAR SIR,—Your correspondent "Stickler" has given a very useful contribution in "He Has Letters After His Name." Would he add to our indebtedness to him by giving his views on the correct form of addressing (in correspondence) a person who suffers *inter alia* from a Doctorate! Should it be, *e.g.*:

Mr. M. Blank, Ph.D., . . .
Dr. M. Blank, Ph.D., . . .
M. Blank, Esq., Ph.D., . . . or ?

Yours faithfully,

M. BARASH.

159, Palace Chambers,
Bridge Street, Westminster, S.W.1.
July 10, 1947.

Street Lighting

DEAR SIR,—Now that the permission has been given for 50% street lighting from the middle of the next month many engineers all over the country will be getting their installations in order. May I through your columns make a plea for a reduction of the power of each lamp rather than a reduction in the number of light units? There is no doubt that a lighting installation suffers very seriously if only half the lamps are put into lighting. Indeed, the deceptive effect of the bright light followed by a pool of darkness may be such that from the point of view of motoring accidents the roads would have been safer unlit. On the other hand, the light output on the lamp can quite simply be reduced to one half its normal value and the effect on the installation can be relatively slight.

Economies in gas consumption are undoubtedly necessary but we should do our best to see that they are not achieved at the expense of a disastrous toll of life on the roads.

Yours faithfully,

L. T. MINCHIN.

25a, Thurlow Road,
London, N.W.3.
July 10, 1947.

Application of Research

DEAR SIR,—Your editorial on "Application of Research" in the May 14 issue of the "GAS JOURNAL," has been read with great interest, as it indicates that your thinking closely parallels ours. Research that is paid for by an industry must be conducted and reported in such a manner that the executive and general readers in that industry can readily understand why certain work is undertaken, how it is being conducted, and what the results are in terms of short or long range business appraisal.

Research by endowed institutions, governments, &c., can enter the fields of pure research, because their results are contributions to science and do not have to be balanced against business possibilities within a reasonable time. Pure research should, however, be undertaken by an industry if some advantageous business results can be foreseen within a reasonable time and that industry is in a position to finance the work.

Yours faithfully,

EUGENE D. MILENER,
Co-ordinator of General Research.

American Gas Association,
420, Lexington Avenue, New York 17, N.Y.
June 11, 1947.

Diary

July 21.—London and Counties Coke Association: Finance Committee 11 a.m., Executive Committee 11.30 a.m. Central Committee 1.30 p.m., Gas Industry House.

July 22.—Industrial Gas Development Committee, Gas Industry House, 2.30 p.m.

July 22.—Public Works, Roads, and Transport Congress and Exhibition: Institution of Gas Engineers' Session (Dr. Harold Hartley presiding). "The Gas Industry and Efficient Fuel Service in the Home," G. C. Holliday (Gas Light and Coke Company); "Town Gas in Industry and Commerce," A. Higgs (Yorkshire Industrial Gas Centre). Olympia, 11 a.m.

July 29.—B.G.C.—Domestic Development Committee: Technical Sub-Committee, Watson House, 11 a.m.

July 30.—B.G.C. Domestic Development Committee, Gas Industry House, 10.30 a.m.

News in Brief

The **Total Subscribed** in response to the Building Fund Appeal of the Institute of Fuel now exceeds £13,000, being thus well over half way towards the target in mind.

Negotiations have been opened with a view to the supply by the Hindley Gas Department to the Westhoughton Consumers Gas Company of up to 60 million cu.ft. of gas per year.

Proposed Extensions to the Swan Village Works of the Birmingham Gas Department were criticized at a recent meeting of the West Bromwich Town Council, when it was decided to take every possible measure to resist the carrying out of the scheme on the ground that if it was proceeded with it would have an adverse effect on the neighbourhood.

Dr. Harold Hartley, President of the Institution of Gas Engineers, will preside at a Gas Session at the Public Works, Roads, and Transport Congress and Exhibition at Olympia at 11 a.m. on July 22, when two Papers will be presented and discussed, one on "The Gas Industry and Efficient Fuel Service in the Home," by G. C. Holliday (Gas Light and Coke Company), and the other on "Town Gas in Industry and Commerce," by A. Higgs (Yorkshire Industrial Gas Centre).

Growth of the Membership of the British Gas Staff Association in Gloucester, Wiltshire, Somerset, Devon, and Cornwall in the last few months has necessitated the formation of a Regional Council to co-ordinate the activities of the branches in that Region. A provisional Regional Council has been operating, but as a result of a representative meeting in Bristol a properly constituted Regional Council has been formed. The Association has welcomed into membership a numer of the staff of the Bristol Gas Company. The Regional Council Secretary is Mr. C. Bell, Charleville, Mangotsfield Road, Staple Hill, Bristol.

Over 37,500 Square Yards of Land near the present gas-works at Doncaster is to be acquired by Doncaster Gas Committee for the purpose of extensions.

About 150 Ex-Service Employees of the Coventry Gas Department were taken to Trentham Gardens last week, the outing being sponsored by the Corporation Gas Committee. Alderman J. Howatt, Chairman of the Committee, and other members of the City Council, were in the party.

Trade Statistics for February, 1947, just issued by the Department of Industry and Commerce, in Eire show imports of 6,469 tons of gas coal, valued at £19,821, as against 15,096 tons, valued at £42,654 in February, 1946. This brings the total of these imports for the first two months of 1947 to 24,718 tons, valued at £75,288, as against 31,776 tons, valued at £90,873, in 1946.

Ascot Gas Water Heaters, Ltd., have made available 15,000 copies of their publication *Houses into Flats* for local authorities, town planners, architects, &c., and are arranging, in co-operation with gas undertakings, a series of receptions in the provinces as a means of cementing the liaison between the Gas Industry and those interested in housing, at which copies of the book are being distributed to the guests. The first of these receptions was held at Cardiff, where Mr. R. J. Auckland, Director and Manager of the Cardiff Gas Light and Coke Company, welcomed the visitors to the Bute Terrace showrooms and thanked Ascot Gas Water Heaters, Ltd., for the opportunity to place the new publication before those interested. A number of houses in Cardiff have already undergone conversion and many more are available for that purpose. Mr. Auckland added that the gas supply in Cardiff will be implemented when the new coke ovens of Guest, Keen, and Baldwins, Ltd., are completed, and there will be a plentiful supply for all domestic and industrial needs.

LEEDS UNIVERSITY

The following Degrees were conferred on students of the Department of Coal Gas and Fuel Industries with Metallurgy, at the Degree Ceremony in Leeds Town Hall, on Friday, July 4.

Doctor of Philosophy.

*Ashley, L. F.—For a thesis entitled, "The Synthesis of Methane from Carbon Monoxide and Hydrogen over Various Nickel Catalysts."

Hall, A. R.—For a thesis entitled, "The Stability of Aerated Flames and Flame Speeds at High Pressures."

Ieason, D. B.—For a thesis entitled, "An Investigation into the Mechanism of the Dynamic Combustion of Town Gas in Refractory Tunnels."

*Moorhouse, R. D.—For a thesis entitled, "The Catalytic Conversion of the Organic Sulphur Compounds in Coal Gas of Hydrogen Sulphide."

Moszynski, Z. K. A.—For a thesis entitled, "The Preparation of Reactive Fuels from Blends of Coal and Peat."

Master of Science.

*Buckley, J. W. A.—For a thesis entitled, "The Influence of Catalyst Composition on the Control of Carbon Deposition during Methane Synthesis from Carbon Monoxide and Hydrogen."

*Kruger, Miss H.—For a thesis entitled, "The Reduction of Some Nickel Catalysts and its Relation to their Activity for Methane Synthesis."

* Research Assistants on the Joint Research Committee of the Gas Research Board and the University of Leeds.

Bachelor of Science.

Gas Engineering.—Honours Degree: Class I—Arnfield, R. V., Roberts, G. F. I. Class II—Freeman, H., Walters, W. J. Ordinary Degree: Lancucki, W. J. Diploma: Dunikowski, A. A., Wade, G. A.

Chemical Engineering.—Honours Degree: Class I—Dawson, S. H.

Fuel and Metallurgy.—Honours Degree: Class I—Dearnley, G. S. Class II—Millward, R. Ordinary Degree—Binner, S., Crompton, H., Mason, C. F., Wise, E. H.

Metallurgy.—Honours Degree: Class I—Carter, R. D., Dennison, J. P., Parr, J. G. Class II—Cockaday, R. E., Hoyle, G., Tull, E. V. Ordinary Degree—Brigham, W. B., Forster, G. B., Simpson, P. R.

Mr. G. F. I. Roberts is the son of Mr. A. R. W. Roberts, who was, until recently, Manager of the Hereford Corporation Gas Department.

The following students held Scholarships while at the University: G. F. I. Roberts (Cartwright Holmes), H. Freeman (Brotherton), W. J. Walters (Brotherton), S. H. Dawson (Brotherton), G. A. Wade (Corbet Woodall).

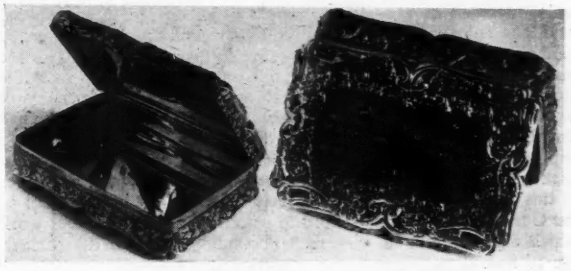
Mr. S. H. Dawson has now been awarded a University Scholarship in order to continue his studies.

MURDOCH MEMENTO

The Council of the Institution of Gas Engineers records, on behalf of all members of the Institution, its gratitude to a small group of prominent companies in the Gas Industry who, at a private ceremony recently, presented to the Institution, as a token of appreciation of its services in various ways, an interesting and beautiful memento of William Murdoch, father of the Gas Industry. The memento is in the form of a chased gold snuff box, bearing the following inscription:

EX FUMO DARE LUCEM

THIS BOX WAS MADE FROM PART OF A
GOLD MEDAL PRESENTED TO WILLIAM MURDOCH
BY THE ROYAL SOCIETY OF LONDON IN 1808,
FOR A TREATISE ON HIS APPLICATION OF THE
ILLUMINATING PROPERTIES OF CARBURETED HYDROGEN
GAS
TO THE PURPOSE OF FURNISHING A NEW AND ECONOMICAL LIGHT.



The William Murdoch Snuff Box

The snuff box, which was fashioned in 1850-51, was, at the time of her death, in the possession of the daughter-in-law of William Murdoch, from whom it passed to her nephew. Murdoch was born in 1754 and died in 1839. The centenary of his death was marked by the Institution of Gas Engineers, at its 76th Annual General Meeting in 1939, by a Murdoch Centenary Lecture.

Murdoch invented gas lighting in 1792 and in 1798, while Manager of the Soho Works of Boulton and Watt, started a department for the supply of gas-making plant for the lighting of factories and private houses. In 1812, the Gas Light and Coke Company received its Charter of Incorporation for the purpose of lighting the Cities of London and Westminster and the Borough of Southwark. Its first Engineer was Samuel Clegg (born 1781), who was apprenticed to Boulton and Watt and trained by William Murdoch on specialized gas-works plant.

WAVERLEY ASSOCIATION OF GAS MANAGERS

PRESIDENTIAL ADDRESS*

of

JAMES DICKSON, M.Inst.Gas E., Dundee

THE honour you bestowed upon me in electing me to undertake the duties of President of the Waverley Association of Gas Managers was appreciated the more highly for two reasons, the first of which is that it came to one whose later activities in a lifetime of work spent in the Gas Industry have been centred on Tayside, far north of the Border area of the Waverley Association, and the second is, that you should have elected me in the full knowledge that this would be my valedictory Address as a Gas Engineer and Manager.

It is also an honour and one of the pleasures of my office to wear the "Wm. Young Medallion" in this city of Edinburgh, in the neighbourhood of which Wm. Young laboured and left behind him so rich a legacy of intellectual work on the distillation of the oil products derived from the carbonization of shale, and to which he so continuously applied the scientific point of view in his pioneering researches into its derivatives.

If one desires at this hour further instruction from the work of Wm. Young, it is surely to be found in his extraordinary faculties of observation and the masterly intellect he brought to bear upon the application of scientific principles to Industry. We have travelled a long way from those early efforts in the carbonization of shale in vertical retorts, but it was in large measure due to his genius and those who later crowned his work with advancements in design and construction that the retort has evolved in its present form for the carbonization of coal for the manufacture of coal gas. His influence on those with whom he worked was inspiring. and the results of his work continue to-day to animate a generation like ourselves engaged in the recovery of the valuable constituents of coal and the conservation of its heating properties.

The retrospective view of the Gas Industry extends over 135 years of public service, and to-day we are in a state of flux from which we must emerge with renewed energy when a clearer view is unfolded concerning the channels through which our products will flow in home and world markets. If the danger of recurrence of the fuel crisis of the past winter has been apprehended in its full significance, it can only result in the organization of the fuel resources of the country being regarded as a composite whole and loads balanced between coal, gas, coke, oil, and electricity. Due regard should, however, be paid to the suitability of these respective forms of heat energy for the purposes for which they are used, for only by striving to meet the requirements of the user in respect of cost and convenience will individual initiative attain still higher efficiency in production and distribution. In all the changes through which we have passed and will yet have to pass, one issue of paramount importance has raised itself—the scarcity of coal. Whatever, therefore, I may pass over in this Address, which may be a phase of expedient development in the Gas Industry, I cannot afford to ignore those aspects of our work which are contributing with such abounding effect to the efficient use of fuel.

The Fuel Position

The Gas Industry is intimately concerned with domestic supplies of gas, and the Report of the Fuel and Power Advisory Council presided over by Sir Ernest Simon, entitled "Domestic Fuel Policy," warrants the thoughtful consideration of all gas engineers. In the statistics, based on conditions as they existed in 1938, are also included the figures of consumption of coal, coke, gas, and electricity in domestic premises estimated from returns which became available during the war years. The problem resolves itself into one of ways and means for the most efficient production and distribution of the heat energy from 181 million tons of coal (exclusive of exports and bunker shipments), of which 50.4 million tons, in the form of bituminous coal and anthracite, were delivered to domestic premises. In addition, 21 million tons of coke were produced for the home market by gas-works and coke ovens, of which 2.5 million tons were delivered to domestic premises. With regard to the 50.4 million tons it is estimated that a further 11.5 million tons have been used in gas and electricity works for the production of domestic fuels.

The total gas used by statutory and other undertakings, but excluding gas sold by coke ovens, apart from the quantity resold by gas undertakings, amounted to 1,530 million therms, of which 925 million therms, equal to 60% of the output of the Industry, were used for domestic purposes.

The total output of the electricity industry amounted to 20,793 million units, of which amount 5,360 million units, equal to 26% of the output of the industry, were similarly employed.

The division of the load between different fuels for domestic use at 1938 was estimated at bituminous coal and anthracite 80%, coke 6%, gas 10%, electricity 4%.

The statistics issued by the Ministry of Fuel and Power for 1945 give the latest available figures of coke production as 25.59 million tons, of which gas-works production is 11.60 million tons and coke oven production 13.99 million tons. Domestic premises, including shops, offices, and other establishments, partly or entirely non-residential, absorbed 3.41 million tons; gas-works (including coke used for the manufacture of water gas), blast furnaces, foundries, engineering, railways, other industry, non-industrial establishments and miscellaneous (including the Services) absorbed 21.96 million tons; shipments abroad amounted to 0.13 million tons, and a change in distributed stocks accounted for the balance.

In the summary of objectives and recommendations regarding a long-term plan the Simon Report recommends:

"It should be the target of a national domestic fuel policy to secure that the 50 million tons of bituminous coal now burnt with a working efficiency of 20% should be replaced in 20 years by smokeless solid fuel, or by bituminous coal burned smokelessly, or by gas, or by electricity, with an average coal economy efficiency of not less than 40%."

In effect, this means that 25 million tons are required to fulfil the demands for which 50 million tons were previously employed. The Gas Industry cannot fail to ignore the implication of that objective. During the war years efforts were successfully turned towards improvement upon the figure of 73% efficiency ascertained in the "Egerton" report from the return of authorized undertakings in 1937, and towards the end, notwithstanding heavy disabilities, the efficiency of carbonization had been raised to 76% by ascertainment of the results obtained from 94% of the coal carbonized by the Industry.

Coal, Coke, and Oil

Examination of the statistics of the Ministry of Fuel and Power provides an arresting picture of the contribution which the Gas Industry is making to the heat requirements of domestic and industrial life, calculated as gas and coke, and it will be my endeavour to deal with a few of those issues in which the future of the Industry is so heavily involved.

The effects on the Industry of scarcity of coal and the steady increase in the use of oil, combined with the large increase in demand for gas for industrial and domestic purposes, are reflected in the statistical returns for 1945, as follows:

	1938	1944	1945 (provisional)
Gas produced	million cu.ft. 319,550	million cu.ft. 365,300	million cu.ft. 380,914
Coal carbonized	million tons 19.128	million tons 20.630	million tons 21.043
Gas oil used for carburetted water gas manufacture	million gall. 32.707	million gall. 93.277	million gall. 102.322
Coke used for water gas production	million tons 0.48	million tons 1.04	million tons 1.10

* Delivered at the Annual Meeting, Edinburgh, June 27.

In giving consideration to the trend of matters which have now combined to restrict the use of coal in gas-works, the gas engineer is presented with difficulties attached to the marketing of coke, which continues to fill so important a part in industrial, commercial, and domestic life. Present circumstances are such that large quantities of coke are being transferred to water gas plants to an extent which is changing its character from the hitherto accepted medium for meeting peak demands to one which is becoming more and more merged in the base load. There can be no doubt as to the tremendous assistance which carburetted water gas has given to undertakings in surmounting the outputs required at times of peak demands, long before the lessening production of coal first asserted itself. In the decisive situation which has now developed the gas supply position will be reinforced through transference from the coal carbonizing process to the generation of carburetted water gas, while the coke position will be worsened to the extent of 2 tons taken off the market, additional to each ton gasified.

The Industry has been instructed to reduce the amount of coal carbonized chiefly by means of reduction of distribution pressures and in manufacture by the use of oil in various processes which involve its use for carburetted water gas generation, by orthodox and unorthodox methods, and also in vertical and horizontal retorts. The winter of 1947 will be remembered among the worst in living memory, and its influence on fuel conditions was exerted at a time when stocks of coal had run down to the barest margin of safety. The facilities which have been attained by the operation of carburetted water gas plant and the inherent advantages of gas storage enabled the Gas Industry to surmount peak load requirements with a very large measure of success, but more restrictions continue to be imposed on the use of gas.

Fuel oil is more expensive than coal, although it carries with its use most of the advantages which apply to the use of gas as a fuel. In present circumstances its utility for railway traction and large boilers for steam raising purposes are instances where it may be found beneficial compared with coal.

During 1946 industrialists were asked to use up to 2 million tons of oil on conversion schemes, and the Government have recently intimated that by the middle of 1948 these schemes will have increased this figure to 5 million tons, equivalent to a saving of 8 million tons of coal per annum. This estimated amount is additional to the increasing quantities which are being used for the manufacture of carburetted water gas.

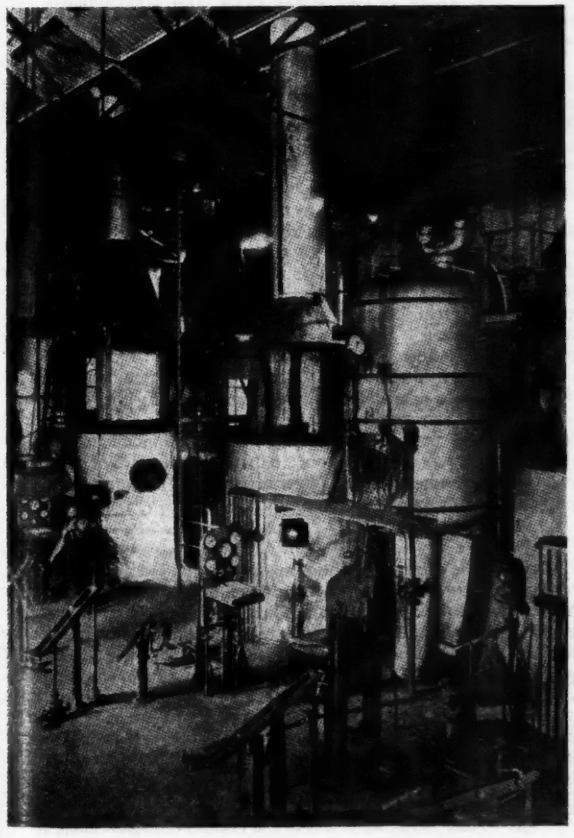
DUNDEE GAS-WORKS

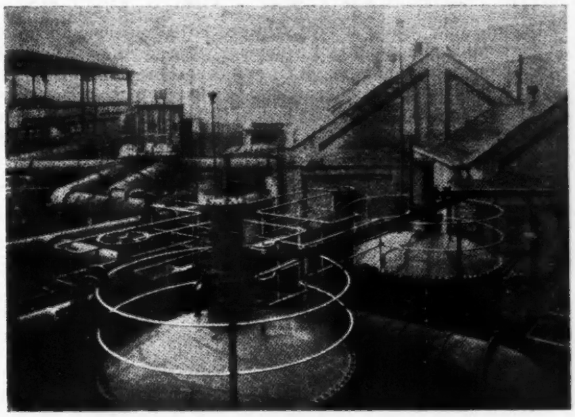
Below.—*Humphreys and Glasgow Carburetted Water Gas Plants at Dundee. There are three sets, each with a capacity of* 1,650,000 *cu.ft. per day.*

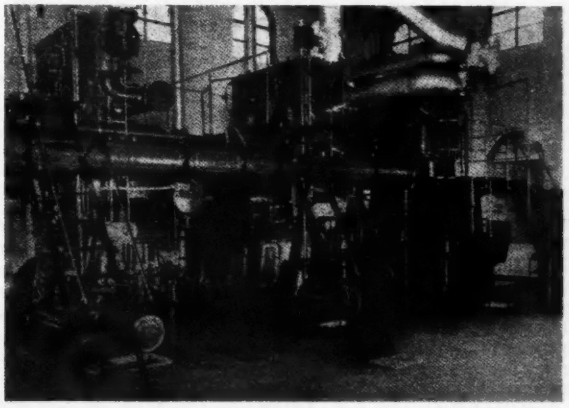
Right (top).—*W.W.D. Electro-Detarring Plant. There are two sets, each capable of treating* 10 *million cu.ft. per day.*

Centre.—*Gas Compressing Plant, comprising two Fullerton and Barclay compressors, each with a capacity of* 200,000 *cu.ft. per hour, and one Bryan Donkin compressor with a capacity of* 300,000 *cu.ft. per hour.*

Bottom.—*Bryan Donkin Exhauster, with a capacity of* 500,000 *cu.ft. per hour.*







A statement has also been made that the possibility of further increases was bound up with the availability of oil, its handling facilities, and that the change-over beyond a certain point from an indigenous to an imported fuel required careful consideration.

Quality of Coal

The quality of coal with which gas-works are supplied should be compatible with the needs of the carbonizing process. It is so futile in its ultimate result that deliveries of coal containing constituents which go to make up so enormous a proportion of the nation's wealth should be restricted both in quantity and quality when supplied for carbonizing purposes. Figures relative to proximate analyses of coal deliveries to Dundee showing the variation in quality compared with pre-war conditions are as follows:

Year	Tons of coal carbonized	Moisture %	Volatile matter %	Fixed carbon %	Ash %	Breeze in coke %
1938-39 ...	92,204	6.94	34.22	54.02	4.82	10.67
1945-46 ...	122,739	8.11	31.57	52.70	7.51	24.55
1946-47 (10 months) ...	100,133	8.39	32.43	51.90	7.36	24.24

A return to the quality of coal delivered in 1938-39 would in itself effect a considerable reduction in tonnage while increasing the yield of the secondary products derived from its treatment, but there are few signs of this aspiration being gratified in the immediate future. In the circumstances the following table is presented, showing the costs of carbonizing coal combined with the costs of generation of carburetted water gas over 10 months ended Mar. 15, 1947:

	s.	d.		
Coal carbonized	3	0.861	per 1,000 cu.ft.	
Coal handling charges ...		0.885	,,	
Carbonizing wages		1.947	,,	
Gross coal gas costs ...	3	3.693	,,	
Deduct—				
Coke... ...	1	2.712		
Tar		4.374		
Sulphate of ammonia ...		0.491		
Benzole ...		1.419		
Coal wagons		0.056		
	1	9.052	per 1,000 cu.ft.	
Net coal gas costs ...	1	6.641	,,	
Carburetted water gas generation and repairs to plant	1	5.459	,,	
Combined net gas costs...	1	6.402	,,	
PRODUCTION				
Coal gas	...	1,510,155,735	cu.ft.	
Carburetted water gas ...	...	383,007,063	cu.ft.	proportion in mixed gas 20.23%
		1,893,162,798	cu.ft.	

Calorific Value of Gas

Embargoes placed upon the choice of source of coal supplies were such as warranted a recast of thought regarding the calorific value of town gas in Dundee as from Nov. 16, 1944, and a new declaration of 425 B.Th.U. per cu.ft replaced the " declared value " of 450 B.Th.U. which had operated since 1924. This decision was made because of the recurring difficulties towards the end of each series of quarterly tests in achieving the declared standard without the assistance of the tolerance of 0.5 decimal granted by the authorities, while maintaining on the retorts a pressure which created unsatisfactory conditions both in respect to loss of gas and the comfort of the operators.

The change proved beneficial in its effect upon coal throughout and general manufacturing conditions. In the retort houses where the erection of a new bench was being undertaken the benefits were inestimable during a very severe spell of weather in January, 1945, in reducing the aggregate tonnage of coal carbonized and, as a consequence, the use of ancillary plant. On the distribution side the results were not such as to cause any inordinate number of calls upon consumers by maintenance fitters for the purpose of readjusting burners

Efforts were made towards maintaining the specific gravity of the gas within closely defined limits and the mains pressures were kept at satisfactory levels. The change substantiated our view that calorific value has but little relation to the main combustion characteristics of a gas and provides in itself small guidance to burner behaviour but heating value is, of course, a valuable guide in gas utilization when correlated with specific gravity.

As a result, we no longer strive to attain a high enrichment value from coal gas, but operate coal and carburetted water gas plants to provide a figure for " unstripped " gas, which can be readily maintained around 440 C.V. for the former and 420 for the latter under the presently restricted limit of benzole recovery of one gallon per ton of coal carbonized.

Our combined coal gas and carburetted water gas contained a progressive proportion of 23.85% of the latter at the respective date.

I would here pay tribute to the valuable efforts that are being made towards the synthetic production of methane, as described in the reports of the Gas Research Board—*i.e.*, the complete gasification of coal by the use of oxygen under pressure and the reaction of hydrogen with semi-coke and with coal at a high rate to give methane by direct action with carbon. Having regard to the probable high cost of production, especially the cost of oxygen, to which the capital costs will add a significant quota, it appears likely that for some considerable time to come the manufacture of carburetted water gas will claim more attention, even although from the fuel efficiency angle the process is operated on a 60% basis compared with 70% claimed for the methane process.

Coke Production and Sales

It will be of interest to study again the statistics of the Gas Industry for 1945 with reference to the production of coke, the extent to which savings in coal can be effected by the introduction to town gas supply of a higher percentage of carburetted water gas, and the repercussion of the process on the amount of coke available for sale.

In applying an assumed proportion of 30% of C.W.G. to the total gas production and estimating a 20% increase in consumption in 1948—a not unlikely figure prior to the injunctions on restriction—it is found that coke produced for sale to the domestic and industrial consumer would be reduced by somewhat over 1 million tons, approximately 14% of the amount of coke available for sale in 1945. In the latter year the proportion of C.W.G. in town gas supply amounted to 17.14%.

In drawing conclusions from the statistics, with particular reference to conditions in Scotland, I am of the opinion that for reasons chiefly attached to coal, particularly its low coking qualities and high breeze content, the calculated average production figure of 0.5511 tons of coke (exclusive of breeze) per ton of coal carbonized is not attainable, and this would be reflected in a higher ratio of diminished supply.

I consider 30% C.W.G. included in town gas supply is the maximum which could be expected from production units while paying regard to the availability of spare plant with which to maintain output during the time required for clinkering, re-lining of generators, and general repairs. The attainment of such a percentage would result in 20% more gas being supplied for an increase of somewhat under 1½% on the 1945 figure of coal consumption with approximately 14% reduction in coke available for sale, a valuable contribution to those which the Industry has so often made towards coal economy.

In Dundee we have, on occasions, considerably exceeded a figure of 30% C.W.G. under emergency conditions arising from large reconstruction of carbonizing plant having to be undertaken between March and November; but these were exceptional circumstances, and having regard to the strong demands for coke, 25% of C.W.G. per annum would provide a more reasonable service of fuel considered in terms of gas and coke.

How far all this would fit into the policy enunciated in the report on " Domestic Fuel Policy " is a matter for serious consideration. The use of solid smokeless fuel is envisaged for many years ahead, and the Industry is expected to contribute its share. Gas will play a large part in the programme, but the requirements of industrial, domestic, and business premises are also built up on a demand for coke, of which approximately 51% goes to domestic use, while central heating on a large scale absorbs 35% and industrial needs amount to 14%.*

It is of interest to know that of the 51% going to domestic use only 4% is used in the open coke fire, the remainder being used in domestic coke boilers. The open solid fuel fire is the form in which it is expected to play a large part in the planning of heat requirements, and it is therefore a matter of national concern that the operations of the various interests involved should be determined in a measure which will provide the best service to the consumer.

District Heating

Considerable claims have been made for what is known as district heating, operated by means of coal-fired boilers in a central boiler house with a system of insulated piping led throughout the supply area in ducts placed in the footways by which hot water is brought up to the consumer's premises. The claims are made on the basis of warm, dry houses all the year round, with constant hot water at less cost than coal, gas, or electricity. This is a very big claim, upon which it is not necessary to enlarge unduly, except to remark that in comparing costs regard must be paid to the capital expenditure involved, and a strict accounting obtained thereunder before venturing on the weekly pricing of heat supplies. The running costs require to provide for considerable losses in distribution, especially in cold

* " Gas Service," W. L. Boon, London and Counties Coke Association, 1947.

weather, due to radiation of heat in the ducts. It is stated that 300 houses is the minimum number for which district heating could be economically supplied, that much depends on local conditions, and if there is commercial waste heat near or a large swimming bath open winter and summer, this minimum may be reduced. These qualfications are considerable in their intent.

Compared with the worst conditions under which coal and coke can be used in the houses which they are intended to serve—*i.e.*, around 18 to 20% efficiency, district schemes of this type may offer advantages, but the development of domestic appliances for burning solid fuel is in many cases obsolescent, and the aim is to attain an average working efficiency of not less than 40% in new houses. It is stated that district heating is particularly suitable for municipal housing estates, but surely it is in this type of house that efforts will be directed towards achieving a high standard of efficiency in the use of solid fuel in at least one fireplace in each house. It has been stated it is necessary that trial installations should be set down in various parts of the country in order to obtain an ascertainment of the facts.

The advantages claimed are those attached to gas—viz., labour-saving, cleanliness, convenience, economy, and a non-polluted atmosphere. The Corporation of Dundee pioneered two installations of this character after the first World War, one serving 250 and the other 268 houses, with the approval of the Scottish Office obtained to the experiments, the structural cost being a charge against the State Housing Account. The system is under the control of the Engineer and Manager of Public Baths and Wash-houses. There are 162 three-apartment and 88 two-apartment houses in the former and 216 three-apartment and 52 two-apartment houses in the latter scheme.

The weekly charges must, therefore, be considered in this aspect, and with the knowledge that the cost of gas supply has to bear its own fixed charges on capital expenditure, plus its contribution to Imperial revenue for income tax and to local rates based on its valuation as a revenue producing undertaking. The charges for heating are at present 5s. 6d. and 6s. 6d. per week for the two and three-apartment houses respectively—*i.e.*, £14 6s. and £16 18s. per annum.

These charges are equivalent at Dundee gas prices to an annual consumption of 74,800 cu.ft. or 317.9 therms for a two-apartment house, and 89,200 cu.ft. or 379.1 therms per annum for a three-apartment house. On the block charge system they would average 3s. 9.55d. per 1,000 cu.ft. or 10.72d. per therm.

The houses are also supplied with gas cookers except in four cases, where electric cookers are installed, while in others gas fires, wash boilers, and portable heaters are found in use for "topping up" purposes.

Appendix I, which is worthy of close study, shows the average consumption of gas in these houses for the various combinations of gas using equipment, It will be seen that notwithstanding the hot water delivery from the central boiler, additional gas requirements are not inconsiderable.

The average domestic consumption in Dundee per ordinary meter in the year ended May 15, 1946, was 30,400 cu.ft. or 129.2 therms, and per automatic meter 32,100 cu.ft. or 136.4 therms, while the actual gas consumption in these two schemes averages 19,702 cu.ft., or 83.7 therms.

From an analysis of the Appendix it is found that the average cost of providing a fuel service in a house where "topping up" heat is provided by means of a gas fire amounts to £20 3s. for a two-apartment house and £22 17s. for a three-apartment house. When coal fires are in use for "topping up" it is not anticipated by reason of the intermittent nature of the heating that the cost will be less than that for gas.

It has been estimated that in a small suburban house accommodating two adults and two to three children a fuel service can be made available by the provision of a coke fire heating the living room and a back boiler providing a hot water service of 200 gallons per week during winter months, and a sink heater and bulk heater providing these facilities during the summer months, all cooking, clothes washing, and ironing requirements, and intermittent heating of the bedrooms by means of gas fires, with an annual fuel usage of 40 cwt. of coke and 197½ therms of gas.*

The cost of this service, which has all the attendant advantages attributed to district heating, would, therefore, at the rates in operation in Dundee, amount to £14 13s. 4d. per annum.

A survey of the comparisons strengthens my view that a modernized solid fuel fire combined with an efficient gas supply brought to the rooms where heat can be usefully employed will provide all the necessary services at less cost, with a greater degree of control and more convenience to the user, than can be obtained by a district heating scheme consuming coal for the purpose of heating water and distributing this over the large area of ground envisaged in a minimum scheme of 300 houses, bearing in its running costs the very considerable heat losses due to radiation and in its capital costs the fixed charges on steam raising and distributing plant.

Advances in Plant Capacity

In the 1913 arbitration case involving the annexation of Broughty Ferry, at which time the annual production of the Dundee Works amounted to 946 million cu.ft. with a maximum daily productive capacity of 6.15 million cu.ft. from horizontal retort and C.W.G. plants and an average daily output in December of 4.1 million cu.ft., it was estimated that 50% more production could be obtained on the then existing ground area—viz., 12.97 acres, which is the present area. The maximum day's output during the past winter was 9.275 million cu.ft., the average daily production during the maximum week ended Feb. 15 was 8.11 million cu.ft., and the annual production will attain dimensions around 2,300 million cu.ft.

The rated capacity of vertical and horizontal retort plant in 1914 was 8.695 million cu.ft. per day, and the area occupied by the plant 25,097 sq. ft., equal to 2,886 sq. ft. per million cu.ft. of gas. In 1947 the respective figures are 11.2 million per day and 9,758 sq. ft., equal to 871 sq. ft. per million cu.ft. of gas.

The carburetted water gas plant was rated at 1.5 million in 1914 and the area occupied was 4,270 sq. ft., equal to 2,847 sq. ft. per million

* (Andrew, Dunning, and Holliday, Institution of Gas Engineers Annual General Meeting, June, 1945.)

APPENDIX 1

GAS CONSUMPTIONS IN DISTRICT HEATING SYSTEMS

Appliances in use	Stirling Park				Logie				Total—Stirling Park and Logie		Average annual consumption
	Ordinary meters		P.P. meters		Ordinary meters		P.P. meters				
	No.	Average annual consumption (cu.ft.)	No.	Average annual consumption (cu.ft.)	No.	Average annual consumption (cu.ft.)	No.	Average annual consumption (cu.ft.)	No.	Average annual consumption (cu.ft.)	Combinations of appliances
Cooker (A)	131	18,900	3	20,500	104	17,900	27	21,400	265	18,780	19,210 cu.ft. cooker
Cooker (B)	89	21,150	4	25,010	70	17,800	10	20,950	173	19,870	
Cooker (A), fire (A)	1	30,600			7	21,850	1	49,200	9	25,860	
Cooker (B), fire (A)	1	57,900			3	26,900			4	34,650	28,840 cu.ft. cooker and fire
Cooker (A), fire (B)					8	27,500			8	27,500	
Cooker (B), fire (B)					2	35,950			2	35,950	
Cooker (A), wash boiler (B) ...	3	21,700							3	21,700	22,810 cu.ft. cooker and, wash boiler
Cooker (B), wash boiler (B) ...	2	22,300	1	30,800	1	19,200			4	23,650	
Cooker (B), wash boiler (B), fire (A)					1	49,900			1	49,900	Cooker, wash boiler, and fire
Cooker (A), washing machine (B)	1	15,100			1	12,100			2	13,600	18,575 cu.ft. cooker and washing machine
Cooker (B), washing machine (B)	2	23,550			3				2	23,550	
Cooker (A), portable fire (B) ...	1	11,200			3	14,400			4	13,600	14,690 cu.ft. cooker and portable fire
Cooker (B), portable fire (B) ...	2	17,950			2	13,600			4	15,780	
Cooker (B), refrigerator (B) ...	2	33,050							2	33,050	Cooker and refrigerator
Cooker (A), ring (B)					1	22,200			1	22,200	Cooker and ring
Electric cooker ; ring (A)					1	700			1	700	Ring
Electric cooker ; wash boiler (B)...	1	2,700							1	2,700	Wash boiler
Electric cooker	1				1				2	Nil	
Consumptions not available ...	1		22		6		1		30	Not available	
	238		30		211		39		518		

A—Property of Gas Department or Housing Department.
B—Property of tenant.

cu.ft., compared with 4.95 million and an area of 4,480 sq. ft., equal to 905 sq. ft. per million cu.ft. of gas in 1947.

The purifiers in 1914 were capable of dealing with a throughput of 6 million cu.ft. per day on an area of 33,611 sq. ft., equal to 5,602 sq. ft. per million cu.ft. of gas. To-day the rated throughput is 8 million cu.ft. on a ground area of 24,065 sq. ft., equal to 3,008 sq. ft. per million cu.ft. of gas passed. There is sufficient spare ground upon which to erect plant of 6 million cu.ft. per day capacity, while the original site area now includes the compressor house.

In other directions there has been a definite trend towards a high ratio of productive capacity relative to ground space occupied. Gasholders still take up a comparatively large area relative to manufacturing plant, but a policy involving decentralized storage has been adopted, with results which are reflected in the area set free for units of manufacturing, purification, and process plant. The station has now been planned on lines which will meet daily requirements of 14 million cu.ft. from the combined outputs of coal and carburetted water gas plants, after making allowances of 5% on the carbonizing plant for retorts out of use for "scurfing" and repair and one out of three units of C.W.G. plant retained as a stand-by.

That it has been possible so to do is a tribute to the development in ideas and the energy displayed by gas engineers in the design of plant, and those improvements in methods and processes which have brought the art and science of gas engineering to its present state of highly organized efficiency.

(To be concluded)

COVENTRY SETS NEW RECORD

Following a record net profit of £75,539 for the financial year 1945-46, a further record has been set up by the Coventry Gas Department for the year 1946-47 with a net profit of £88,757. This, as Mr. J. E. Wakeford, Engineer and Manager, points out in his annual report for the period ended Mar. 31, has been achieved despite the fact that a reduction of 2.3d. per therm was put into effect from April 1, 1946, on all gas used for non-domestic purposes. In addition, a 1.2d. per therm cut was made during the year on gas supplied to the out-districts, the effect of which has been to create a single schedule of gas charges applicable throughout the area of supply.

The City Council has now approved a special rebate of ½d. per therm for all classes of gas consumers. Even without this special rebate the price of gas at Coventry to-day is the same as it was over five years ago, since when wage awards have accounted for an increase of some £70,000 per annum and coal increases are costing the Department more than an additional £160,000 per annum.

Total make for the year was 18,572,799 therms, an increase of 9.11%, due to extra demand for gas for domestic, non-domestic, and prepayment purposes. Gas sales totalled 16,560,576 therms, an increase of 5.83%, made up of 5.58% increase in non-domestic, 12.39% increase in domestic, and 6.91% in prepayment; with a 33.22% decrease for public lighting. Make per ton decreased from 81.18 therms to 79.26 therms, the decrease of 1.92 therms being attributed to deterioration in the qualities of coal received.

Appliances on simple hire decreased by 97 to 41,612, due to transfers of appliances from simple hire to sale. Appliances sold totalled 5,334 against 2,028, an increase of 3,306, the figures reflecting the first complete year's sales policy since the cessation of hostilities.

Total revenue expenditure at £1,025,207 showed an increase of £100,831, mainly on account of increases of £51,409 for manufacture; £31,100 for work executed for consumers; £8,278 for maintenance of consumers' hire appliances; £3,982 for rent and rates; £8,493 for management; and £3,430 for showrooms and publicity. Net receipts from gas sales were £763,484, a decrease of £3,451; income from residuals was £333,165, an increase of £44,980. Income in respect of work executed for consumers and appliances sold amounted to £102,158 which, after deduction of the outlay of £78,702, leaves a profit of £23,456, arising through the great increase in the number of cookers, wash boilers, water heating appliances, and coke grates sold.

After appropriations the balance carried forward is £55,577 against £41,790 brought in. Capital expenditure incurred during the year amounted to £54,119. The loan debt on the undertaking is now £742,179, a decrease of £27,187 for the year.

Mr. Wakeford states in his report that a serious position arose during the fuel crisis in February, when the coal stock position fell as low as five days' supply. He estimates the net loss to the undertaking as the result of the three weeks' electricity cut to industry at approximately £10,000.

The report refers to the terms of the link-up by high pressure main between Coventry and Birmingham and between Coventry and Rugby. A 25-year agreement provides that the annual supply of gas to Birmingham is to be at the rate of not less than 500 million cu. ft. per annum, and a similar agreement with Rugby covers an annual supply of approximately 200 million cu. ft. Mr. Wakeford places on record his appreciation of the happy spirit of co-operation which existed throughout the discussions which led to these agreements.

An additional £5,000 has been allocated to works renewals, making £20,000 in all. This is considered desirable in view of the higher costs of renewals. Despite this addition the net cost of gas into holder has been lowered, and the average price received for gas per therm is 0.34d. less than last year.

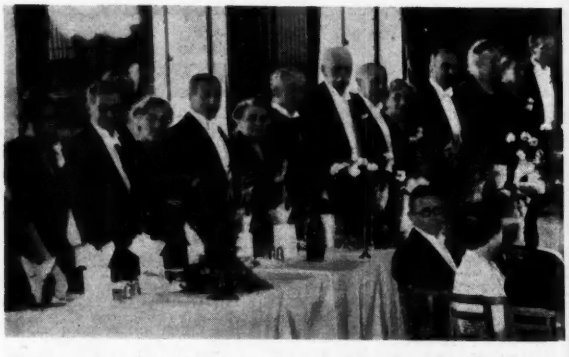
Having in mind the probable nationalization of the Gas Industry, Mr. Wakeford believes that it is more than ever necessary that the present high standards of maintenance and efficiency be not only maintained, but if possible improved. All reasonable development, both on the manufacturing and distribution sides, should in no wise be retarded consequent upon the probable change from local to national ownership. If such a policy is adopted it will ensure that the undertaking is handed over in first-class condition, financially and otherwise, and as such it will have a claim to take its full part in the future development of the Gas Industry in the Region.

Apart from any question of ownership the gas undertaking is a vital asset to the City in that the total rate contribution from the undertaking represents 2¼% of the total rateable income of the City and provides employment for a thousand of its citizens.

Without doubt the bold policy of the Committee in reducing last year the price of gas to industry by 2.3d. per therm, representing some £60,000 per annum, has been fully justified, and in a great measure it has been the means of converting this load with an 18% decrease in one year to a 5½% increase in the succeeding year. The further reduction in gas charges to all out-district consumers, bringing them into line with City charges, was a wise step and will, Mr. Wakeford believes, encourage the use of gas to the ultimate advantage of the undertaking and the gas consumers as a whole.

Alderman J. Howat, Chairman of the Gas Committee, in presenting the report to the City Council, said the net profit was the greatest that any trading undertaking of the Corporation had ever made. This had been achieved despite the fact that gas charges were reduced to the extent of some £70,000 per annum, while coal had accounted for an additional £25,000 and wage and long service awards a further £24,000 during the year. The Gas Committee could be proud of the fact that even now the gas charges to all consumers showed no increase on those obtaining more than five years ago, and the special rebate of ½d. per therm to all gas consumers would make a useful contribution to all gas users. In the last five years wage awards had accounted for approximately £70,000 additional per annum, while authorized increases in the price of coal over the same period were costing the Department something of the order of £160,000 each year.

CROYDON CENTENARY



The top table at the Centenary Dinner of the Croydon Gas Company on July 2. The group includes Mr. Harold Williams (Deputy Chairman of the Company), Colonel H. C. Smith (Chairman of the British Gas Council), the Mayor of Croydon, Mr. William Cash (Chairman), Mr. Shinwell (Minister of Fuel and Power), and Lord Hyndley (Chairman of the National Coal Board).

MANCHESTER DISTRICT ASSOCIATION

PRESIDENT'S DAY AT BLACKPOOL

ABOUT 150 members of the Manchester District Association of Gas Engineers spent a pleasant day at Blackpool in sunny weather, on June 20, where they received an official welcome from Alderman P. Round, J.P., the Deputy Mayor, who officiated in the unavoidable absence of the Mayor, Councillor Rhodes W. Marshall, J.P.

The members visited the Princess Street Gas-works, and then proceeded to an inspection of the new Marton Works of the Corporation, which are situated on the Borough boundary alongside the L.M.S. Railway, Blackpool-Kirkham line, and which were built by the Blackpool Corporation in 1940.

The party were subsequently entertained at luncheon by the Blackpool Corporation. Mr. T. R. Cook, President of the Association, in the Chair.

"The County Borough of Blackpool"

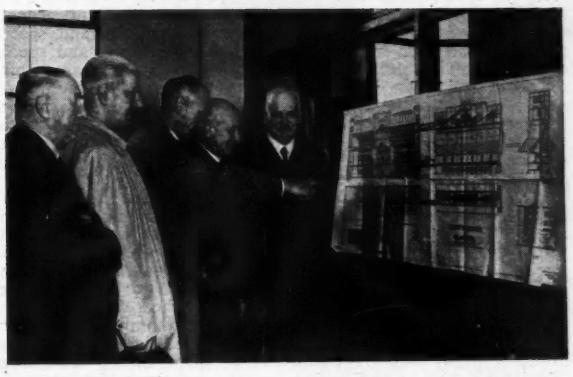
The toast of "The County Borough of Blackpool" was proposed by Sir **Frederick J. West, G.B.E., J.P.,** who stated that the Association was really the guest of the Borough. They were all very appreciative of the compliment that had been paid to the President, Mr. T. R. Cook, and to the members of the Manchester District Association of Gas Engineers by inviting them to visit Blackpool and for the generosity of the hospitality they had received. In submitting the toast he might say that in these days the public were not sufficiently aware of the admirable and voluntary service rendered by their local government administrators. There was much prevalent criticism based mainly upon a very flimsy and inaccurate knowledge of many of the subjects which were discussed and dealt with by their representatives. Having visited America, Canada, Australia, and New Zealand, he had come to the conclusion that the local government of this country gave them all a good start and was in many respects superior, being undertaken by administrators whose only object was to serve the community well. Sir Frederick West then referred to the remarkable progress made in the development of the Borough of Blackpool and to the broad outlook of those who were especially concerned with its civic affairs. The seven miles long promenade was the finest and most remarkable achievement of its kind in this country.

The public utility services, gas and electricity, were an outstanding example of their kind to all municipal undertakings, Blackpool being the first, he understood, to introduce electrically driven trams along the Promenade, while the gas-works at Marton were a magnificent monument to the foresight and enterprise of all connected with its installation.

Alderman **P. Round, J.P.,** Deputy Mayor of Blackpool, in responding to the toast, apologised for the unavoidable absence of the Mayor. He felt that whatever tributes could be paid to Blackpool the Borough had earned them because great work had been done by previous pioneers in promoting its progress. Earnest endeavours were being made to provide sources of happiness and enjoyment for millions of visitors. He had great pleasure in extending a most cordial welcome to the members of the Association, and expressed the delight of the municipality upon learning that the Engineer and Manager of the Gas Undertaking, Mr. T. R. Cook, had been selected to fill the highest office which it was within the power of the Association to confer. The Blackpool Corporation entertained a very high respect for the abilities of Mr. Cook, from whom they had received much guidance and assistance. To elect him as the President of the Association was also to honour Blackpool.

"The Manchester District Association"

Sir **Ernest Smith, C.B.E.,** in proposing the toast of "The Manchester District Association of Gas Engineers," said that when the President of the Association, Mr. T. R. Cook, paid him the honour of inviting him to do so he felt he had no alternative. It was in 1903, in Blackpool, that he (Sir Ernest) first went to school, and he had been closely associated with its schools ever since, so that he regarded the Borough as his second home.



The President (Mr. T. R. Cook) with Sir Frederick West, Sir Ernest Smith, Mr. James MacLusky (Halifax, Senior Vice-President) and Mr. J. D. Ashworth (Blackburn, Junior Vice-President)

There was the threat, and even the certainty, of nationalization of the Gas Industry, though it would probably not take place for another two or three years. The delay made matters even worse than if nothing was to happen, because they had to hold their hands over that period of time. It was to be hoped that Lancashire and Yorkshire, under the ægis of the Association, would not rest on their oars, but strive just as strenuously as heretofore to promote the progress of the Industry as if there was nothing going to happen. If there was to be any obstruction, of course it could not be helped, but they could all still keep on striving; it would certainly be all to the good of the Industry, which had never been at a higher level in the esteem of the general public than it was to-day. Mainly owing to the war perhaps the industrial uses of gas had whetted the appetites and desires of all industrialists. If it had not been for the war exigencies, possibly, there would not have been sufficient plant installed to cope with the demands now being made upon all undertakings.

The Manchester District Association of Gas Engineers at Blackpool

The future of Industry was bound up with the establishment of such Associations as the Manchester District Gas Association. Discussions upon technical matters had been encouraged, and even if a particular development was not complete investigators had been enabled to collaborate without any reference as to whether they were cutting across a policy or otherwise. That was a condition which must be perpetuated whoever owned the Industry. There must be no crabbing of technical development or technical discussion. If there was a change-over to the new point of view, of course all their own ideas would have to undergo change as well. It was contemplated that in the future there would be one fuel service industry—gas, electricity, coal. Purely commercial reasons as distinct from technical reasons would have to go and excessive competition would have to cease.

Both the gas and the electricity industries were to be congratulated upon the fact that there was a reduction of 66% for certain equipments. The ridiculous position at the present time was that nothing was ever considered except from the point of view of: "Well now, if we do this thing for electricity, we must do it for gas; because they will be grumbling at the other industry for receiving unfair treatment." Sixty-six per cent. purchase tax had been taken off for certain equipment—cookers—and no account was taken of space heating, &c. One could understand special types of load such as water-heating, space heating, and special conditions of the electrical industry where peak loads were going to cause trouble, but one could not understand that it was necessary to have a similar state of things for gas in reference to water-heating. The only people who would suffer would be the consumers, because it would be the easiest thing in the world to save more coal by allowing the consumer to use gas for water-heating.

Mr. **T. R. Cook,** in responding to the toast, expressed his personal thanks to the Deputy Mayor for the municipal welcome to the Borough and for the invitation to Luncheon. During the period of his service with the Blackpool Corporation he had received the greatest courtesy from the local authority, and the hand of friendship had always been extended to him as a chief official of a municipal undertaking. He wished also to take the opportunity of thanking his Chairman and Committee, Councillor S. Morris, and the members of the Committee, for permitting him to accept the honourable position of President of the Manchester District Association of Gas Engineers; a position which, since the year 1870, had been occupied by a long list of Presidents who had done so much for the Industry. To have his name at the end of this list was indeed an honour to Blackpool. On behalf of the Association he desired to extend their congratulations to both Sir Frederick West and Sir Ernest Smith upon the recent honour conferred upon them by His Majesty the King. Sir Frederick had received the honour of the G.B.E., and Sir Ernest a Knighthood, and they were all aware how much these honours were so richly deserved.

The work of both gentlemen on behalf of the Industry, as well as their public work for so many years for the good of the country could be appreciated by reference to the many offices they had held in peace and in war. Many of those present would remember the visit they paid to the Manchester works of West's Gas Improvement Company, Ltd., during the early years of the war. It was really remarkable how Sir Frederick West and his staff were able to organize the work in order to cope with general contracting maintenance work, the building of new installations, an example of which had been seen that day, and at the same time lay out a large section of their works for the production of ammunitions of war.

Sir Ernest Smith continued, Mr. Cook, was among many other things, remembered for his Papers and Addresses dealing with the Carbonization of Coal and Costing of Gas Production, U.S.A. They also remembered his work on the Area Gas Supply Committee in 1931, particularly those engineers in the South Yorkshire District, and the findings of that Committee which resulted in the co-operation of coke ovens and gas-works, saving millions of tons of coal in the utilization of coal gas which was previously burnt at the bleeder heads of the coke ovens. Sir Ernest was also remembered as Director-General of Gas Supplies during the early war period, and his work in the co-ordination of gas supplies in this country. He secured far greater co-operation between gas undertakings than ever existed before in an endeavour to meet the unprecedented requests for supplies of gas for industry, in many cases where gas supplies were practically non-existent. Again, he was also President for some years of the Institute of Fuel, which was recently granted the Royal Charter.

In conclusion, he desired to tender his thanks to the Secretary of the Association, Mr. Thomas Haworth, for the assistance he had rendered to them all in making the arrangements for the meeting.

The toast of "Our Guests" was proposed by Councillor **S. Morris,** Chairman of the Blackpool Corporation Gas Committee, in humorous vein. Mr. **G. E. Currier** (Bradford) responded.

The Bee-Bee Biscuit Works

The members then paid a visit to the Bee-Bee Biscuit Works, Devonshire Road, Blackpool, where they were welcomed by the Directors and subsequently entertained at tea. Bee-Bee Biscuits, Ltd., manufacturers of the popular "Symbol" biscuits, whose premises consist of a modern factory erected in 1933, located on the outskirts of Blackpool in congenial surroundings, embrace a total floor area of 63,000 sq.ft. with room for extensions. Installed in the factory are two oil-fired boilers capable of 2,000 lb. of steam evaporation per hour per boiler, which is required for process and heating duties. For producing hot water for the mixing of dough and auxiliary hot water supply when the main boilers are out of operation, a thermostatically-controlled gas-fired boiler provides hot water at the definite temperature requirements through the medium of a mixing valve, to the dough mixing machines. The two main baking ovens, manufactured by Messrs. Baker-Perkins and Messrs. Vickers, consist of standard baking chambers having 90 burners and 104 double burners respectively. The mixing and conveyor plant is fully automatic and modern in design, and to ensure cleanliness and purity, the ovens are fitted with clean air systems made by Keith-Blackman and Vickers respectively. The average hourly gas consumption varies from 3,000 to 4,000 cu.ft. per oven, according to the class of biscuits being produced, each oven being capable of producing 70,000 biscuits per hour.

The factory is supplied through an 8 in. main at normal district pressures, separate meters being provided for each oven in order that the respective baking costs may be calculated. The average annual gas consumption amounts to 20 million cu.ft., and a scheme has been prepared for considerable extensions to the factory which includes the installation of at least one additional gas-fired baking oven, of greater capacity than existing plant.

CANADIAN GAS ASSOCIATION

At the 41st Convention of the Canadian Gas Association, held at Niagara Falls, Ontario, the following elections were made.

President: F. A. Brownie, Executive Assistant to the President, Canadian Western Natural Gas, Light, Heat, & Power Co., Ltd., Calgary.

1st Vice-President: E. H. Rohrer, Manager, Gas Department, British Columbia Electric Co., Ltd., Vancouver, B.C.

2nd Vice-President: Alec Mackenzie, Sales Manager, Foundry Division, General Steel Wares, Ltd., Toronto.

Executive Secretary and Treasurer: George W. Allen, Gas Survey Engineer, 7, Astley Avenue, Toronto 5, Ontario.

TWENTY-FIRST ANNIVERSARY OF HILMOR LTD.

Frascati's Restaurant was the venue of a happy gathering of the staff of Hilmor, Ltd., together with many friends, for a dinner and dance to celebrate the 21st birthday of the firm on July 2. The chair was taken by the Chairman, Mr. Siltzer, supported by Mr. J. H. Hawes, Managing Director, and Mr. Hampson, Director.

During the speeches many interesting points about the development of this firm came to light. The origination of the firm was brought about by Mr. J. H. Hawes' service in the Royal Naval Air Service during the 1914-18 war, when he recognized the difficulties experienced by mechanics in the bending of light gauge tube. From this experience he developed the Hilmor tube bending machine and when he came to register the Company and patents the name Hilmor was derived from his wife's maiden name, Hilda Moore.

The formation of the Company in 1926 coincided with the introduction of the use of light gauge copper tubing and resulted in the designing and successful sales and operation of bending machines for this purpose. The Company has continued to develop and patent new machines to complete a range of 20 different types.

On the outbreak of war in 1939 Hilmors went into active service, working day and night in the production of special machines for the Services and producing millions of actual bends. They did not escape enemy action. One of their buildings was completely destroyed and brought about the evacuation of part of the organization to Knebworth.

With the cessation of hostilities and the return of normal business the Board have pushed ahead with reconstruction of their factories and have now taken full control of the East London Engineering Works at Leytonstone, which is being devoted entirely to the manufacture of tube bending machinery.

Further new fabricated machines, together with special fabricated spring formers, to overcome the difficulty experienced in bending the various gauges of copper tube now on the market, have been completed and will be demonstrated at the Marine and Shipping Exhibition to be held at Olympia from Aug. 28 to Sept. 13.

Another Conference is reported in a recent booklet issued by the Council of Industrial Design, who, in conjunction with the Federation of British Industries, discussed the "Britain Can Make It" Exhibition last September. The conference dealt with the designer in relation to industry, his place in manufacture and sales departments, and his importance in the future. Many familiar names occur within these pages—that pioneer of British design, John Gloag, whose written works on the subject are widely known, the Hon. Josiah Wedgwood, and Mr. A. Whitaker, Chief Engineer of Ascot Gas Water Heaters, Ltd. Under the chairmanship of Sir Thomas Barlow, the conference was of great importance in that it showed the present value of good design in industry, and also how it is proposed to spread this awareness and appreciation to the benefit of British prestige as a manufacturing nation.

GAS STOCKS AND SHARES

A sharp rally in British Funds, thanks mainly to official support, was reflected early in the week in increased activity in the industrial market, which was brighter than for some days. Opening at 116.30 the Government security index touched 116.84, but fell back to 116.73. The industrial ordinary index rose from 131.6 to 133.1. Although there was little change in volume, industrial prices generally moved in an upward direction. Business became more subdued after Mr. Morrison's warning about the financial and economic outlook but improved again towards the end of the week. Investment buying in advance of the doubling of the stamp duty on Aug. 1 exerted an influence on industrial values.

Transactions in gas stocks were slightly fewer than in the previous week. There was a steady demand for South Metropolitan Ordinary, which advanced 2½ points. Gas Light and Coke Ordinary also showed an upward tendency and finished 6d. higher at 22s. 9d.-23s. 9d.

Rises and falls in gas stocks during the week were as follows:

OFFICIAL LIST

Croydon, max. div.	100	—105	— 1
Eastbourne, "A"	95	—100	— 2
Gas Light and Coke, ord. ...	22/9	— 23/9	+ 6d.
Liverpool 5 p.c. ord.	118	—122	+ 1
Montevideo, Ltd., ord.	125	—130.	— 2
Newcastle & Gateshead ord. ...	24/6	— 25/6	— 6d.
Primitiva Holdings, Ltd., ord. ...	10/6	— 12/6	+ 6d.
South Metropolitan ord.	97	—100	+ 2½
Do. 6 p.c. irred. pref. ...	125	—130	+ 3
Do. 3 p.c. perp. deb. ...	93	— 98	— 1
South Suburban 5 p.c. perp. deb.	121	—126	— 1
Wandsworth, 5 p.c. irred. deb. ...	121	—126	+ 2

GAS PRODUCTS PRICES

The London Market

July 12

There is no material change to report in the postion of coal tar products. Export of pitch in bulk may be considered as finished for the season, although there may be a few shipments going forward in drums. Pitch for home briquetting is still going forward.

The demand for creosote in the home market is normal and prices are at present unchanged. There is a certain activity in shipments of creosote to the U.S.A., and the demand from America appears to be fairly consistent.

The home road tar season is now in full swing and although there is a cut in the permitted expenditure for road-work generally, some areas are not concentrating on constructional work and are therefore able to do rather more surface dressing than customary. Tank steamers are continuing to load bulk cargoes of tar for abroad, mainly for France, but the demand over the next few months is hardly likely to be sufficient to take up all the tar that is available.

As regards secondary products such as phenol, cresylic acid and naphthalene, the demand is sustained and there is no difficulty in disposing of the production.

The Provinces

July 12

Product market conditions in the provinces remain unchanged so far as the home trade is concerned, for which most of the prices are subject to controls, but there is increased activity in the export market. Average prices for gas-works products this week are: Pitch, 75s. per ton; toluole, naked, North, 90's, 2s. 4d. to 2s. 6¾d. per gall.; pure, 3s. 2¼d. Prices for carbolic acid 60's anthracene, creosote oil (hydrogenation), coal tar oils (timber preservation, &c.) and strained anthracene oil are controlled by Government Orders. Prices for road tar are increased by one penny per gall. by S. R. & O. 1947, 177, under which Order there are also increases in the prices of naphthalene.

Scotland

July 12

With demands at a high level, shortages exist in most products.

Refined tar.* Yield to the distiller is 6d. per gall. ex works, naked. Creosote oil. Timber preserving quality,* 5½d. to 6½d. per gall.; hydrogenation oil,* 5¾d. per gall.; low gravity or virgin oil,† 7¼d. to 7½d. per gall.; benzol absorbing oil, 6½d. to 8d. per gall. Refined cresylic acid is 3s. 6d. to 4s. 6d. per gall. ex works, naked, according to quality. Crude naphtha,† 7d. to 8d. per gall. Solvent naphtha.* Basic maximum prices delivered in bulk, 90/160 grade 2s. 10d. per gall, and 90/190 heavy naphtha, unrectified 2s. 0½d. per gall, rectified 2s. 4d. gall. Pyridine,† 90/160 grade 15s. per gall., and 90/140 grade 17s. per gall.

* Price controlled. † Uncontrolled.

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